

(21) Application No 9201010.7

(22) Date of filing 17.01.1992

(30) Priority data

(31) 9103014

(32) 13.02.1991

(33) GB

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(51) INT CL<sup>5</sup>

B42B 4/00

(52) UK CL (Edition K)

B6A ABX

(56) Documents cited

US 4382326 A

(58) Field of search

UK CL (Edition K) B6A ABC ABL ABP ABX

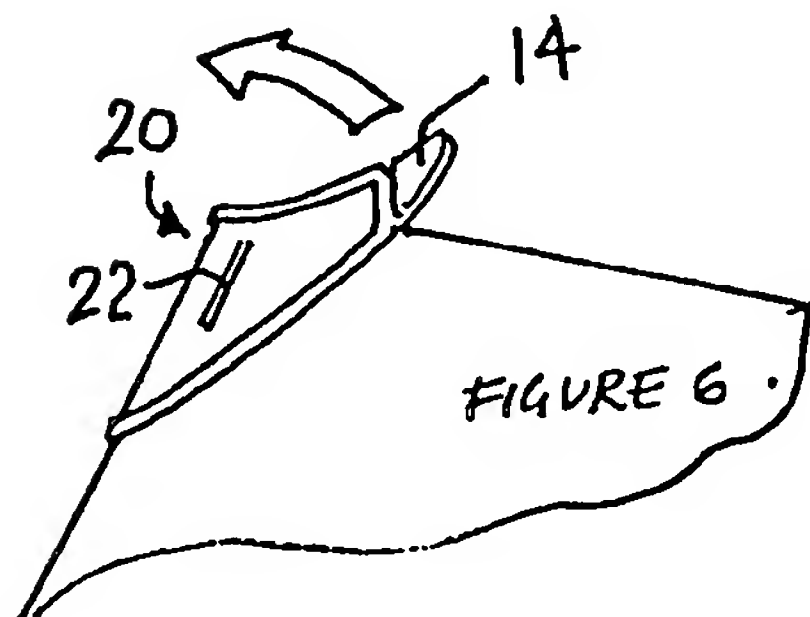
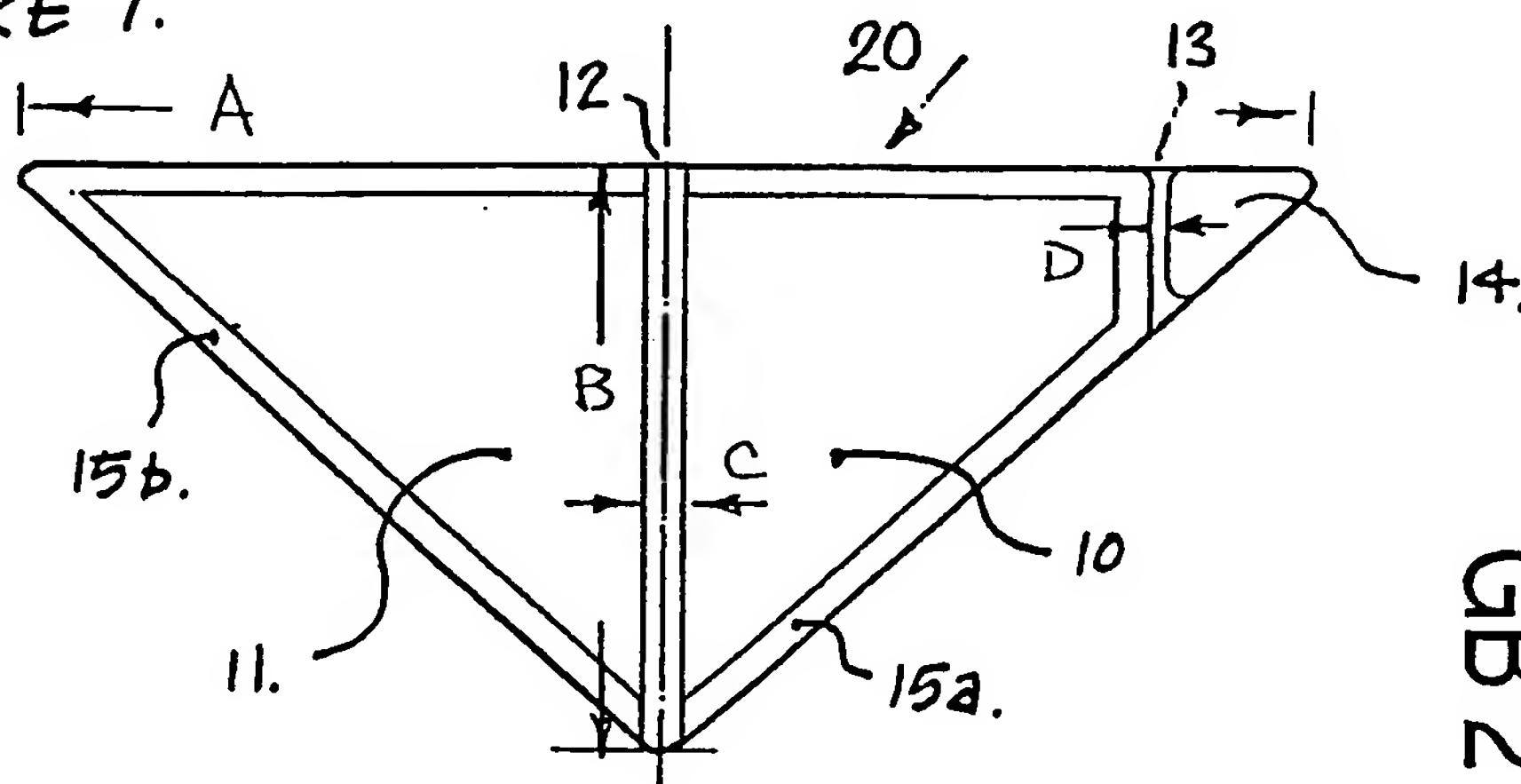
INT CL<sup>5</sup> B25C, B42B, B42F, F16B

Online databases : WPI

(54) An adjunct or ancillary device for use in stapling paper sheets

(57) A staple adjunct (20) is of moulded one-piece construction and has a first panel (10) and a second panel (11) linked by a live hinge (12). By folding the staple adjunct about the hinge, the adjunct may be applied to the corner of two or more sheets of paper. A staple (22) may then be applied by the use of a stapler, the legs of the staple penetrating the first panel (10), the paper sandwiched within and the second panel (11), thus securing the staple adjunct in place. The staple adjunct may then be removed by means of a turn-up tab (14) being lifted away from the surface of the paper facilitated by a second live hinge (13), then being pulled open to its original shape thus unfolding the deformed legs of the staple and freeing the sheets of paper.

FIGURE 1.



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FIGURE 1.

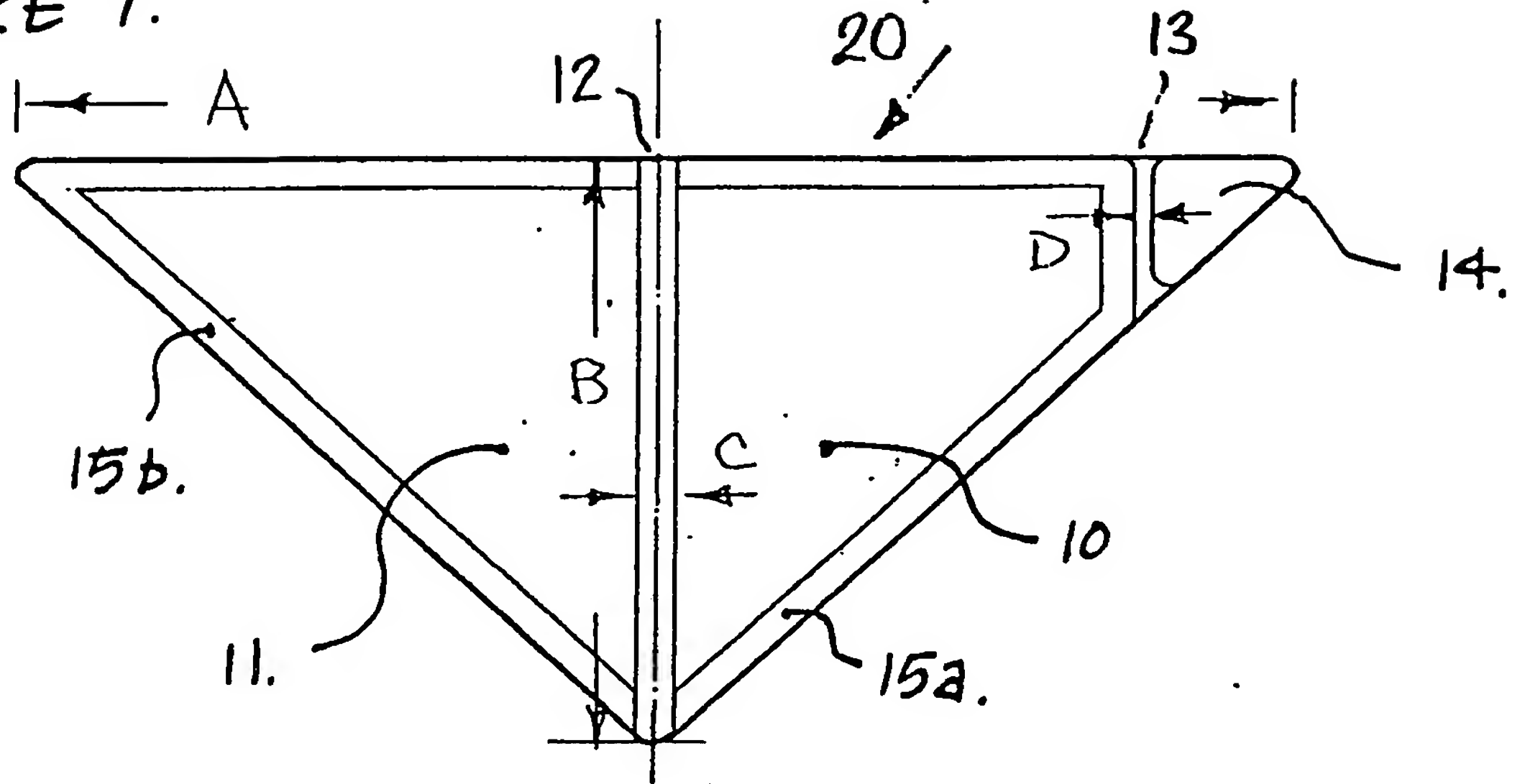
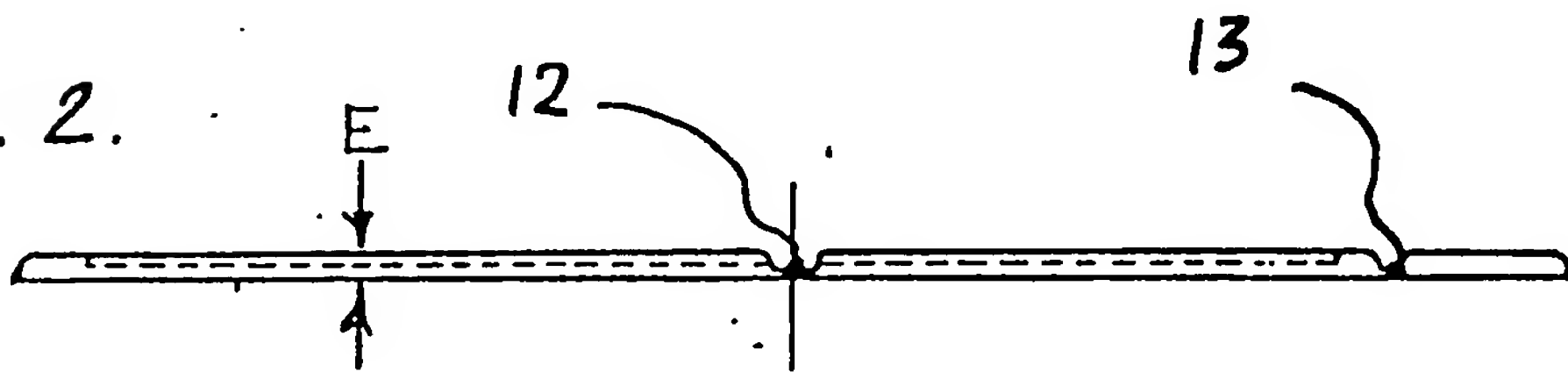
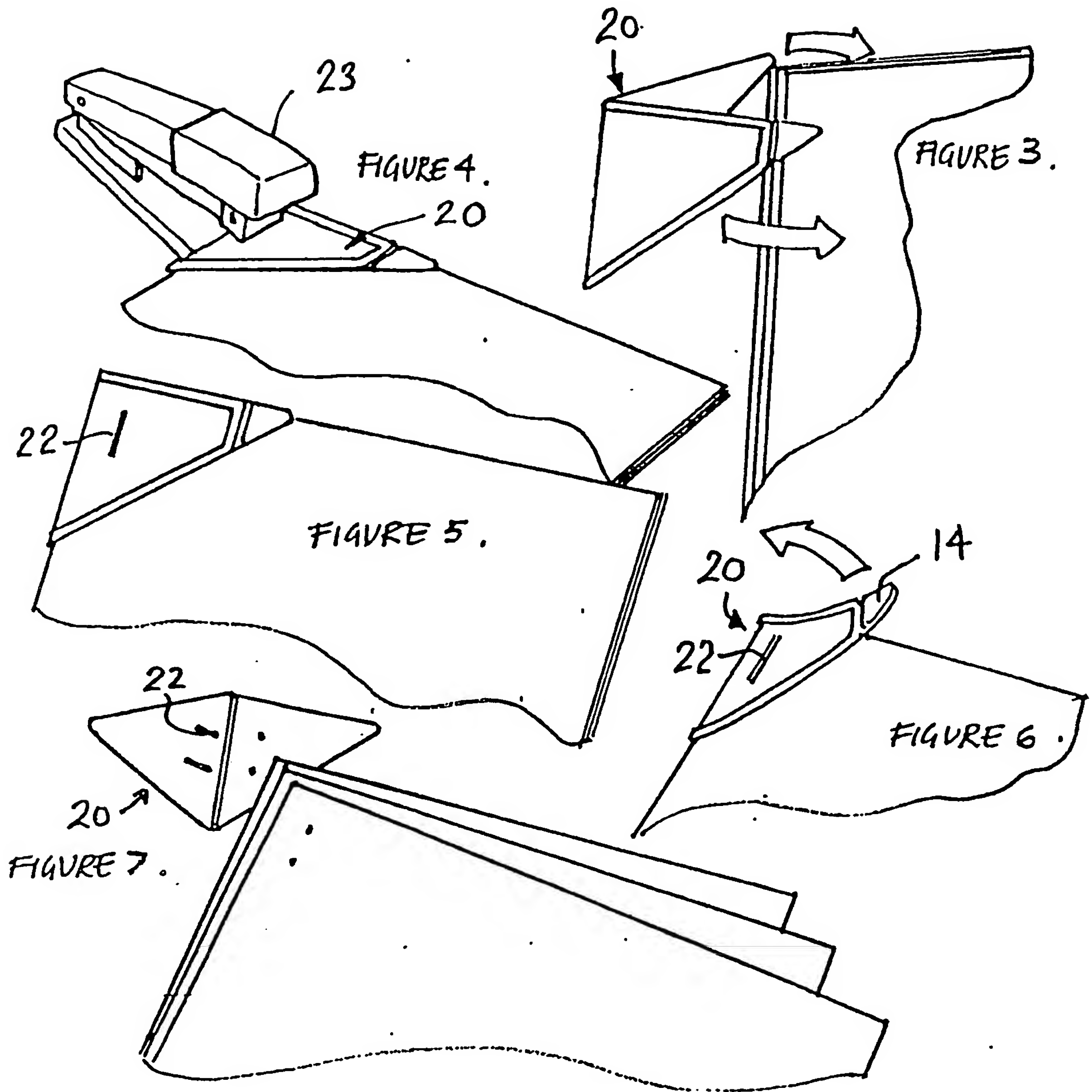


FIGURE 2.





ONE PIECE STAPLE ADJUNCT

This invention relates to a one piece staple adjunct and in particular to a simple device for improving the performance, and the removal, of conventional U-shaped wire  
5 staples used to fasten a plurality of sheets (eg of paper) together.

U-Shaped wire staples are widely used for fastening two or more sheets of paper together as a secure bundle and a wide variety of stapling machines are available which remove  
10 staples one by one from a stick of such staples, pressing the legs of each staple so removed through the bundle of sheets and then bending the projecting ends of the staples at right angles to fasten the sheets together.

However, staples of this character do have certain  
15 disadvantages:

1. Only a small surface area of fastening is available to secure the sheets in the bundle allowing the top and bottom sheets of the stapled document to get accidentally torn off the bundle.
- 20 2. The removal of a staple to separate the fastened sheets when need arises is not easy, despite the availability of staple removing tools on the market. Such staple-removing tools may not be available when required, necessitating the use of finger nails to bend back the  
25 projecting ends and ease the staple out of the bundle.

This invention seeks to avoid both of the above-noted disadvantages.

According to the present invention, there is provided a one-piece staple adjunct of plastics material comprising

first and second staple-receiving panels constructed to provide resistance to tear when used to remove a staple passing therethrough and linked by a live hinge formed by a localised reduction in thickness of the plastics material.

- 5 The adjunct is conveniently formed from a moulded sheet of polypropylene. The thickness of each panel is suitably in the range of 1.2mm to 0.3mm, preferably in the range of 0.8mm to 0.4mm.

10 The live hinge conveniently has a thickness of between 75% to 25% of the thickness of the adjacent panels and preferably in the range 50% to 30% of the thickness of the adjacent panels. A second live hinge is desirably provided adjacent to one corner of one of the panels to provide a flexible turn-up to aid in the removal of the adjunct.

- 15 Details of a preferred embodiment of staple adjunct in accordance with the invention will be now described, by way of example, with reference to the accompanying drawings in which:-

20 Figure 1 shows a plan view of the staple adjunct in a flat condition as supplied for use,

Figure 2 shows a side view of the adjunct of Figure 1,

Figure 3 shows the adjunct of Figure 1 being folded about its live hinge and being moved to envelope a corner region of a bundle of sheets of paper,

- 25 Figure 4 shows the application of a staple through the adjunct and a bundle of papers by means of a conventional stapler,

Figure 5 shows the staple adjunct stapled in place,

- 30 Figure 6 shows the opening of the adjunct, as a prelude to removal of the staple, and

Figure 7 shows the adjunct and the now-opened staple removed from the bundle.

With reference to Figures 1 and 2, the one-piece staple adjunct 20 comprises a first triangular panel 10 and a  
5 second triangular panel 11 linked by a live hinge 12. A second live hinge 13 is provided adjacent to one corner of the panel 10 to create a turn-up tab 14 to facilitate the removal of the adjunct. Stiffening ribs 15a and 15b are provided around the perimeter of each of the panels 10 and  
10 11.

By folding the staple adjunct 20 about the live hinge 12, the adjunct may be applied to the upper left-hand corner of a bundle of sheets of paper as shown in Figure 3. A standard staple 22 may then be applied as illustrated in  
15 Figure 4 using a conventional stapler 23, the legs of the staple penetrating the first panel 10, the paper sandwiched within the adjunct and the second panel 11, thus securing the staple adjunct in place as shown in Figure 5.

The staple adjunct may simply be removed by means of the  
20 turn-up tab 14, this easily being lifted away from the surface of the upper sheet of paper facilitated by the second live hinge 13 as shown in Figure 6, the staple adjunct then being pulled open naturally unfolding the deformed legs of the staple 22 and freeing the sheets of  
25 paper with minimal damage to the paper, as shown in Figure 7.

#### EXAMPLE

A preferred adjunct 20 has the dimension A shown in Figure 1 as 80mm and the dimension B as 40mm. The live  
30 hinge 12 has a width C of 2.0mm and the live hinge 13 has a width D of 1.0mm. The thickness E of the ribs 15a and 15b is 1.0mm, the thickness of the central area of each panel 10 and 11 is 0.4mm and the thickness of the plastics material forming the live hinges 12 and 13 is 0.2mm (i.e 50% of the

thickness of the panels 10 and 11). The turn-up tab 14 is of the same thickness as the ribs 15a and 15b. The adjunct is moulded from coloured polypropylene.

CLAIMS

1. A one-piece staple adjunct of plastics material comprising first and second staple-receiving panels constructed to provide resistance to tear when used to  
5 remove a staple passing therethrough and being linked by a live hinge formed by a localised reduction in thickness of the plastics material.
2. A staple adjunct as claimed in claim 1, in which the adjunct is moulded from polypropylene.
- 10 3. A staple adjunct as claimed in claim 1 or claim 2, in which both panels are of the same shape.
4. A staple adjunct as claimed in claim 3, in which both panels are the same size.
5. A staple adjunct as claimed in any one preceding  
15 claim, in which both panels are triangular.
6. A staple adjunct as claimed in any one preceding claim, in which one of the said panels includes a turn-up tab at one corner thereof to facilitate the removal of the staple adjunct.
- 20 7. A staple adjunct as claimed in claim 6, in which a second live hinge is provided between the turn-up tab and the remainder of the said one panel.
8. A staple adjunct as claimed in any one preceding claim, in which stiffening ribs are provided around the  
25 perimeter of at least one panel.
9. A staple adjunct as claimed in claim 8, in which stiffening ribs are provided around both panels.
10. A staple adjunct as claimed in any one preceding



claim, in which the thickness of each panel is in the range of 1.2mm to 0.3mm, preferably in the range of 0.8mm to 0.4mm.

11. A staple adjunct as claimed in claim 10, in which  
5 the first live hinge has a thickness of between 75% to 25% of the thickness of the adjacent panels, preferably in the range of 50% to 30% of the thickness of the adjacent panels.

12. A stable adjunct as claimed in any preceding claim, in which the plastics material is coloured.

10 13. A one-piece staple adjunct of moulded plastics material substantially as herein described with reference to Figure 1 of the accompanying drawings.

14. A one-piece staple adjunct as featured in the foregoing Example.

Examiner's report to the Comptroller under  
Section 17 (The Search Report)

Application number

9201010.7

Relevant Technical fields

(i) UK CI (Edition K ) B6A (ABC, ABL, ABP, ABX)

(ii) Int CL (Edition 5 ) B25C, B42B, B42F, F16B

Search Examiner

G J W RUSSELL

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASES: WPI

Date of Search

29 APRIL 1992

Documents considered relevant following a search in respect of claims

1-14

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
A	US 4382326 (MINNESOTA MINING) See column 1 lines 7-46 and column 3 lines 13-45	1

Category	Identity of document and relevant passages	Relevant to claim(s)

**Categories of documents**

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

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